U. S. DEPARTMENT OF LABOR
CHILDREN'S BUREAU
JULIA C. LATHROP, Chief

INFANT MORTALITY

MONTCLAIR, N. J.

A STUDY OF INFANT MORTALITY
IN A SUBURBAN COMMUNITY

INFANT MORTALITY SERIES No. 4
Bureau Publication No. 11

WASHINGTON
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LETTER OF TRANSMITTAL.

U. S. DEPARTMENT OF LABOR,
CHILDREN'S BUREAU,
Washington, March 8, 1915.

SIR: I transmit herewith a study of infant mortality in the town of Montclair, N. J.

In this study the Children's Bureau cooperated with the health authorities of Montclair. The schedules were furnished by the Children's Bureau and the data were collected by nurses of the town health department under the direction of Mr. C. H. Wells, health officer. Miss Sophia A. Vogt, of the Children's Bureau, visited Montclair and started the inquiry. The material was tabulated in the bureau and the text written by Miss Margaretta A. Williamson, of the bureau staff.

This description of the life of babies in Montclair during one calendar year is of interest because it shows the facts regarding a particularly favored suburban community in charge of a notably efficient health officer. It is seen that the general infant death rate of Montclair was 84.6 as against an estimated rate of 124 for the birth-registration area of the United States for 1910. A reading of the report shows the variations above and below the average rate in the different localities of the town and their accompanying characteristic factors.

Respectfully submitted.

JULIA C. LATHROP, *Chief.*

Hon. WILLIAM B. WILSON,
Secretary of Labor.

INFANT MORTALITY: MONTCLAIR, N. J.

INTRODUCTION.

The Montclair Board of Health in 1913 determined to conduct an inquiry into infant mortality in Montclair, basing its inquiry upon all the births which occurred in the town during the calendar year 1912 and proceeding according to the plan adopted by the Federal Children's Bureau for its series of infant mortality studies. Schedule forms, such as had been used by the Children's Bureau in its field study in Johnstown, Pa., were furnished to the board of health, and a field agent of the bureau was sent to Montclair to explain to the local investigators the schedule questions and the bureau's methods of collecting statistical information. Two Montclair nurses visited the homes of the babies, interviewed the mothers, and filled out for each baby a schedule covering the first year of its life or as much of the first year as it survived. The fourth-ward mothers were visited by the board of health nurse. The other nurse was engaged to make the investigations in the rest of the town. Believing that a report of the results of this inquiry into infant mortality in a suburban community would be of interest, the scheduled information has been tabulated by the Children's Bureau.

In the report have been included a brief description of the town, an analysis of infant mortality in Montclair in 1912, and a discussion of the various social and civic factors which in Montclair seem to have been closely related to the problem of infant mortality.

The chief sources of information were as follows: Interviews with the Montclair mothers, who by their interest and cooperation made the inquiry possible; interviews with public officials and with doctors, nurses, and others who had been closely connected with infant-welfare work; annual reports of the town departments, particularly the full and detailed reports of the board of health; reports of social and charitable agencies; and personal observation of conditions.

In view of the decision to include in this inquiry all babies born in Montclair in 1912, and to study the conditions surrounding them during their first year of life, the birth certificates were copied from the records of the health officer for all babies born in that year, and a 12-months' lapse of time from the date of birth was allowed in each

case before the baby was visited; i. e., a baby born in November, 1912, was not visited until after November, 1913, in order that the first 12 months of life might have been completed. Births (numbering 53) to nonresident parents at the Mountainside Hospital and stillbirths (20) were excluded from the study.[1]

The mothers of the babies, located from the addresses on the birth certificates, were interviewed and questioned as to the care and home environment of the babies during the first year. The investigation was entirely democratic. All mothers who could be found, whether rich or poor, native or foreign, were visited. Notwithstanding the personal nature of the schedule questions only 8 mothers refused to give the information. From the 518 birth certificates, complete schedules relating to 402 babies were secured and are included in the statistics of this report. Information relating to 116 births could not be obtained for the following reasons: Seventy-three mothers had moved away from Montclair; 20 could not be located; 8 refused to give the information; 1 mother had died; 3 were ill; 1 baby was found to have been born outside of Montclair; 6 mothers were not visited; and in 4 cases the information was not used because it had not been obtained from the mother.

The infant mortality rate in this study is obtained by comparing the number of babies born alive in Montclair in 1912 and included in this study with the number of these same babies who died before they were a year old. The number of such deaths per 1,000 live births gives an exact infant mortality rate for the limited group considered. This method, which has been worked out for the infant mortality series of the Children's Bureau, differs from the usual method of computing the infant mortality rate. The usual method is to compare the live births in a given area during a single calendar year with the deaths under 1 year occurring during the same year, regardless of the possibility that some of the babies who died during the year may have been born in a different area and that not all who die under 12 months of age die in the calendar year of their birth.

[1] The following summary of the number of stillbirths and the number per hundred live births from 1908 to 1912 has been prepared from the Annual Report of the Board of Health for 1912:

Year.	The town.		Colored.		Italian.		Other white.	
	Number.	Per hundred live births.	Number.	Per hundred live births.	Number.	Per hundred live births.	Number.	Per hundred live births.
1908	20	4.7	5	7.6	2	2.3	13	4.8
1909	24	5.6	7	12.1	4	5.8	13	4.4
1910	20	4.7	5	8.6	3	2.8	12	4.7
1911	15	3.2	4	6.4	5	5.1	6	2
1912	20	3.9	4	4.9	6	4.5	10	3.3

GENERAL CHARACTERISTICS OF MONTCLAIR.

Location.—Montclair lies 13 miles to the northwest of New York City, in Essex County, N. J., and is served by the Erie and the Delaware, Lackawanna & Western Railroads and by an interurban trolley. Located in a well-wooded, country-like section of New Jersey, it occupies a long rectangular area comprising 6.1 square miles and extending along the slope of the first range of the Orange Mountains. With an average altitude of 300 feet, it has become noted for its healthful climate.

History.—Montclair had its origin over two centuries ago in the little settlement "Cranetown," then an outlying plantation of Newark. The early settlers were English, who came to New Jersey from the colony of New Haven. In 1812 Bloomfield, including Cranetown, then known as West Bloomfield, was organized as a separate township. In 1860 the name of Montclair was substituted for West Bloomfield, and in 1868 Montclair, together with the Dutch settlement Speertown—the nucleus of Upper Montclair—was incorporated as a separate township. In 1894 Montclair became a town.[1]

Population.—In 1910, according to the Federal census, Montclair had a population of 21,550, of which, after the native white group, the next largest factors were the Negroes (11.5 per cent) and the Italians (7 per cent) with an additional 2.8 per cent native-born of Italian parentage. The estimated population for 1912, the year which this infant mortality study covers, was approximately 24,000.[2]

Wealth.—Due partly to its healthful climate and attractive location and partly to the efforts which have been made to add to the natural beauty of the town, Montclair has become one of the most pleasing of the New York suburbs. Many New York business and professional men have recognized its desirability and have built there comfortable suburban homes. That Montclair is a town of exceptional wealth is shown by the comparison of the assessed valuation of property in towns of approximately the same size—i. e., 20,000 to 30,000 population. In 1912 it had an assessed property valuation of $40,319,062, which was considerably higher than that of any other New Jersey city or town of the same population group and higher than that of any city or town of the United States in the same group with the exception of Brookline, Mass., and Newport, R. I.[3]

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[1] Whittemore, History of Montclair, N. J.

[2] Annual Report of the Board of Health, 1913; estimate based on arithmetic method of U. S. Bureau of the Census for approximating population for intercensal years.

[3] U. S. Bureau of the Census Report on Assessed Valuation of Property and Amounts and Rates of Levy, 1860-1912.

Industries.—Montclair is preeminently a town of homes. The residents have apparently discouraged the location of industrial enterprises. In 1912 an electrical establishment employing 12 persons and a coated-paper factory employing 200 persons constituted the only industrial establishments in the town.[1]

Liquor licenses.—Liquor licenses are granted in Montclair by a majority vote of the town council. In 1912 licenses were held by 8 inns and taverns and 3 wholesale houses.[2]

Hospitals.—Mountainside Hospital is supported by citizens of the following seven towns: Bloomfield, Caldwell, Cedar Grove, Essex Falls, Glen Ridge, Montclair, and Verona. In 1912 there were admitted to the hospital 1,363 cases, of which 158 were maternity cases. One hundred and thirty-one infants were born and 5 infants died at the hospital during the same year.[3]

St. Vincent Nursery and Babies Hospital is maintained by the Sisters of Charity for babies under 2 years. During 1912 only 2 of the 112 inmates entered from Montclair.

Social agencies.—The social agencies of Montclair are organized in a council of philanthropy to promote cooperation and prevent duplication of effort. The following agencies are registered with the Council of Philanthropy and send representatives to the monthly meetings:

Altruist Society.
Board of Education.
Board of Health.
Children's Home Association.
Committee of the Federation of Women's Organizations.
Day Nursery.
Daughters of American Revolution.
Fresh Air and Convalescent Home.
Homeopathic Society.
Montclair Civic Association.
Mountainside Hospital.
New England Society.
Tuberculosis Prevention and Relief Association.
Poor master.
Sons of American Revolution.

The Altruist Society corresponds to the charity-organization societies of other communities. It acts as a sort of clearing house and maintains at its headquarters a card index in which are registered all cases receiving help from any of the agencies represented in the Council of Philanthropy.

[1] Industrial Directory of New Jersey, compiled and published by the New Jersey Bureau of Statistics, 1912.
[2] Annual Report of Town Council, Montclair, N. J., 1912.
[3] Annual report of Mountainside Hospital, 1912.

ANALYSIS OF INFANT MORTALITY, MONTCLAIR, 1912.

Although the group of babies found in a city the size of Montclair is necessarily small, and there are manifest limitations to an analysis of the information concerning the 402 births and 34 infant deaths included in the Montclair inquiry, it is interesting to find that the data collected in this study agree in general with the findings of the more comprehensive inquiries into infant mortality which have been made in this and foreign countries.

INFANT MORTALITY RATE.

The results of the study in Montclair show that of the 402 babies included in the investigation 34 died before they were 1 year old, giving an infant mortality rate for this selected group of 1912 babies of 84.6 per 1,000 live births. This rate is slightly less than the rate (89) for the same year computed according to the usual method [1] and published in the board of health report for that year. The average rate for the five years from 1909 to 1913, computed according to the usual method, was 84.8, which was but slightly lower than the rate (89) for 1912. In 1913 the rate dropped to 64.

Because of this country's inadequate system of birth registration it is impossible to show the infant mortality of any one city as compared with that of other cities throughout the United States. The following table, however, shows the infant mortality rates for 1912 in cities of approximately the size of Montclair (i. e., 20,000 to 30,000 population) within the so-called area of birth registration: [2]

Live births, deaths under 1 year, and infant mortality rate in 1912 for cities and towns of 20,000 to 30,000 population (1910) within the area of birth registration.

City.	Live births.		
	Total.	Deaths under 1 year.	
		Number. [3]	Infant mortality rate.
Maine:			
Lewiston	631	110	174.3
Bangor	371	53	142.9
New Hampshire: [4]			
Nashua	616	82	133.1
Concord	378	43	113.8
Vermont:			
Burlington	554	95	171.5
Massachusetts:			
Chicopee	953	169	177
North Adams	548	62	113.1
Gloucester	476	52	109.2
Medford	551	55	99.8
Waltham	634	55	86.8
Brookline	418	23	55

[1] For explanation of usual method of computing infant mortality rate, see page 8.
[2] Comprising the New England States, Pennsylvania, and Michigan, New York City, and Washington, D. C.
[3] From State report.
[4] Figures for New Hampshire by correspondence, as State report not yet available.

Live births, deaths under 1 year, and infant mortality rate in 1912 for cities and towns of 20,000 to 30,000 population (1910) within the area of birth registration—Continued.

City.	Live births.		
	Total.	Deaths under 1 year.	
		Number.	Infant mortality rate.
Connecticut:			
Norwich	641	90	140.4
Danbury	540	72	133.3
Middletown	575	75	130.4
Norwalk	509	48	94.3
Meriden	747	81	108.4
Stamford	799	105	131.4
Rhode Island:[1]			
Central Falls	691	120	173.7
Warwick	653	87	133.1
Cranston	485	56	115.5
Newport	541	42	77.6
Michigan:			
Battle Creek	477	65	136.3
Muskegon City	682	59	86.5
Pennsylvania:[1]			
Shenandoah	870	217	249.4
Pottsville	457	69	151
Hazleton	758	93	122.7
Norristown	630	78	123.8
Easton	619	60	96.9
Butler	597	63	105.5

[1] Figures for Rhode Island and Pennsylvania by correspondence, as State reports not yet available.

The census report on mortality statistics for 1911 gives the estimated infant mortality rate for the birth registration area of the United States for 1910 as 124. This estimated rate may be compared with the rates for foreign countries in the following table, in which the 1912 figures have been given wherever possible, and in all other cases the year indicated is the latest year for which statistics are available.

Deaths of infants under 1 year of age per 1,000 live births in foreign countries for the latest year for which statistics are available.[1]

Country.	Year.	Deaths under 1 year per 1,000 live births.	Country.	Year.	Deaths under 1 year per 1,000 live births.
Chile	1911	332	Servia	1911	146
Russia	1909	248	Switzerland	1911	123
Ceylon	1912	215	Scotland	1911	112
Jamaica	1912	193	Ontario	1912	110
German Empire	1911	192	Finland	1912	109
Roumania	1912	186	England and Wales	1912	95
Hungary	1912	186	Denmark	1912	93
Austria	1912	180	Netherlands	1912	87
Bulgaria	1909	171	Ireland	1912	86
Belgium	1911	167	France	1912	78
Japan	1910	160	Australia	1912	72
Spain	1907	158	Sweden	1911	72
Italy	1911	153	Norway	1911	65
Prussia	1912	146	New Zealand	1912	51

[1] Compiled from statistics contained in the Seventy-fifth Annual Report of the Registrar General of Births, Deaths, and Marriages in England and Wales, 1912.

ENVIRONMENT.

Neighborhood incidence.—The fourth ward is the most congested section of Montclair, and in it is found most of the negro and foreign population of the town, the Italian being the predominating nationality. Moreover in 1912, according to the report of the board of health, the tenement-house population of ward 4 was 1,476, or 27.3 per cent of the population of the ward, and 268 children under 5 years of age, or 38.4 per cent of the children of that age in the ward, were living in tenements. In this ward were located 80 of the 113 tenement houses of Montclair.[1]

The other wards, except for a few scattered groups of shabby-looking cottages, are almost uniformly attractive residential sections with well-kept shaded streets, comfortable one-family dwellings, and plenty of open space. The finest residences are to be found on the mountain in the section extending across the upper portions of the second, third, and fifth wards. The business district of Montclair is almost exclusively confined to Bloomfield Avenue, which is the main street of the town.

The variation in the infant mortality rate in different sections of the town is shown in the following table:

TABLE 1.—*Population, births, deaths under 1 year, and infant mortaltity rate, by wards.*

Ward.	Population, 1912 (estimated).[1]	Live births.	Deaths under 1 year.	Infant mortality rate.
The town	23,896	402	34	84.6
Ward 1	3,848	44	3	68.2
Ward 2	4,831	78	4	51.3
Ward 3	5,050	43	3	69.8
Ward 4	5,406	161	21	130.4
Ward 5	4,761	76	3	39.5

[1] Annual Report of the Board of Health of the Town of Montclair, N. J., p. 21. 1912.

The highest rate as well as the greatest number of infant deaths was found in the fourth ward, which also had the highest birth rate. In 1912 almost twice as many babies died in the fourth ward as in all the other wards combined. The rate for this ward (130.4) was more than one and one-half times as high as the rate (84.6) for the town as a whole.

In 1913, however, the infant mortality rate for the fourth ward was lower than the rate for the second and third wards, while in 1914 its rate was lower than the average for the entire town. This gratifying decrease in the infant death rate of the most congested section of the town should probably be ascribed largely to the development of the baby clinic,[2] with the "follow-up" visits of the nurse to the mothers in their homes and to the careful supervision by the board of health of the housing and sanitation of this section.

[1] For definition of tenement house, see p. 14.

[2] For baby clinic, see page 28.

Table 2 shows the distribution of births and of deaths of infants under 1 year of native white, foreign white, and negro mothers in the various wards. By far the greatest number of births to foreign and negro mothers occurred in the fourth ward.

TABLE 2.—*Births and deaths under 1 year, according to nativity and color of mother, by wards.*

Ward.	All mothers.		Native white mothers.		Foreign-born white mothers.		Negro mothers.	
	Births.	Deaths under 1 year.	Births.	Deaths under 1 year.	Births.	Deaths under 1 year.	Births.	Deaths under 1 year.
The town.....	402	34	143	7	193	17	66	10
Ward 1.....	44	3	33	2	9	.....	2	1
Ward 2.....	78	4	40	2	26	1	12	1
Ward 3.....	43	3	22	.....	11	1	10	2
Ward 4.....	161	21	30	2	103	13	28	6
Ward 5.....	76	3	18	1	44	2	14	.....

Housing.—Generally speaking, the housing in Montclair is good. The most common type of house is the two story and attic frame cottage for one family, with a yard of good size. The town's housing problem resolves itself for the most part into that of improving conditions in the fourth ward, where one finds the greatest congestion and overcrowding, where one notices the greatest number of houses of unkempt appearance and in bad repair, and where one occasionally finds basement tenements and constantly sees dirty yards.

The fourth ward in 1912 filed with the board of health more complaints against nuisances than any other ward. There were 26 complaints about plumbing from this ward, or 56 per cent of the plumbing complaints for the entire town.

According to the definition of a "tenement house" which appears in the State tenement-house act[1] there were in the town, December 31, 1912, 133 tenement houses, 20 of which would be ordinarily classed as apartment houses. The Annual Report of the Board of Health for 1912 gives the following interesting statistics as to certain living conditions of the tenement-house population:

> The entire tenement-house population averages 1.26 persons per room, or 5 persons to every four rooms; the colored population averages 1.01 persons per room, the Italian 1.67, and the other white population 0.86. Over half of the tenement-house population lives in three-room tenements, with an average of 1.4 persons per room. There are 95 families in two-room tenements and 3 in one-room tenements. All of the tenement houses are provided with sewer connection for water-closets and sinks.

[1] A tenement house is any house or building or portion thereof which is rented, leased, let, or hired out to be occupied or is occupied as the home or residence of three families or more living independently of each other and doing their cooking upon the premises, or by more than two families upon any floor so living and cooking but having a common right in the halls, stairways, yards, water-closets, or privies, or some of them.

As will be shown in the discussion of sewage disposal, Montclair is well sewered. In 1912 there remained in the town 76 privies on unsewered streets and 26 privies on streets in which there were sewers. It should be said, however, that the board of health has passed an ordinance providing that all privy vaults which for lack of a public sewer in the street can not be abolished must be made water-tight and provided with a fly-tight superstructure and self-closing covers.

Although it is recognized that it would be impossible to determine the relative importance of any particular housing defect in its relation to infant mortality, nevertheless a classification of babies visited according to the type of home in which they were found may be of interest. Babies who died during the first week have been excluded from the following summary because it was felt that in a considerable number of these cases prenatal influences must have been largely responsible for their deaths. Nor have illegitimate babies been included, since their home conditions were abnormal. The figures are too small to be conclusive, but they show a tendency toward an increase of infant deaths where poor housing conditions were found.

Although in Montclair was found a large group of babies whose parents owned their homes and an additional group whose parents paid over $30 a month rent, over one-third of the babies lived in homes where the rental was less than $15 a month.

It will be seen that 23 of the babies visited lived in homes where the toilet was a yard privy and 129 in homes in which was no bathtub. A large number of homes were reported as dirty or only moderately clean, and a still larger number of yards were reported as dirty.

The means for ventilation of the baby's room was in most cases good. The actual ventilation, however, which is shown in the summary, depended on the custom of the mother or attendant.

TABLE 3.—*Babies surviving at least one week and deaths under 1 year of age, according to specified housing conditions.*

Housing conditions.	Number.	Deaths under 1 year.	Housing conditions.	Number.	Deaths under 1 year.
Total	384	19	Yard:		
Monthly rental:			Clean	199	8
Under $15	135	8	Unclean	181	11
$15 to $30	76	5	No yard	4	.....
$30 and over	32	1	Toilet:		
Free rent	9	1	Water-closet	361	15
Home owned	119	2	Yard privy	23	4
Not reported	13	2	Ventilation of baby's room:		
Cleanliness of home:			Good	186	7
Clean	226	9	Fair	115	4
Moderately clean; dirty	158	10	Poor	82	8
Bath:			Not reported	1	.....
Bathtub	255	3			
No bathtub	129	16			

NATIVITY, NATIONALITY, AND COLOR OF MOTHER.

Table 4 shows the variation in the infant mortality rate of Montclair according to the nativity, nationality, and color of mother. The death rate for babies of native white mothers (49 per 1,000 live births) is very low; the rate for babies of foreign-born mothers (88.1) is slightly higher than for the town as a whole, while the rate among negro babies (151.5) is more than three times as high as among babies of native white mothers.

More foreign-born white mothers were interviewed than native white mothers, which fact, considering the small proportion of foreign-born population in Montclair, appears to indicate a higher birth rate among the foreign-born women. The Italians formed by far the largest group of the foreign-born mothers, only small groups of mothers of British, Scandinavian, German, and other nationalities being represented among the births in 1913. Nearly all the negro mothers were native.

TABLE 4.—*Births, deaths under 1 year, and infant mortality rate, according to nativity, nationality, and color of mother.*

Nativity, nationality, and color of mother.	Births.	Deaths under 1 year.	Infant mortality rate.
All mothers	402	34	84.6
Native white	143	7	49
Foreign-born white	193	17	88.1
Italian	112	10	89.3
Others	81	7	86.4
British	33	2	(1)
Scandinavian	21	2	(1)
German	9	2	(1)
All others	[2] 18	1	(1)
Negro	66	10	151.5
Native	59	10	169.5
Foreign	[3] 7	.....	.....

[1] Total number of births less than 40; base therefore considered too small for use in computing an infant mortality rate.
[2] Includes 2 Swiss, 6 Canadian, 4 Russian, 2 Polish, 2 Hebrew, 1 Greek, and 1 Armenian.
[3] Includes 6 West Indians and 1 Bermudian.

Because of the small numbers in each group it is impossible to show a comparison of infant mortality rates among the various foreign nationalities represented in the inquiry. Table 4 shows, however, that in the largest single nationality group (the Italian) the infant mortality rate was somewhat higher than in the others.

The Italians and Negroes, the two largest population groups after the native white, seem to have been attracted to Montclair by the opportunities offered for unskilled labor and domestic service. The fathers of the negro babies visited during the inquiry were for the most part servants, chauffeurs, janitors, and laborers, and the fathers of the Italian babies were generally small tradesmen, teamsters, and laborers.

AGE AT DEATH AND DIRECT CAUSE OF DEATH.

The first 3 months of a baby's life are generally admitted to be the most critical of the first year. Of the 34 infant deaths, 24, or 70.6 per cent, occurred during the first quarter. Ten of the 34 babies died when 1 day or less than 1 day old.

TABLE 5.—*Number and per cent of deaths under 1 year occuring in each specified period.*

Period.	Number.	Per cent.
Deaths in first year	34	100.0
Deaths in first 3 quarters	32	94.1
Deaths in first 2 quarters	28	82.4
Deaths in first quarter	24	70.6
Deaths in first month	13	38.2
Deaths in first day	10	29.4

The next table shows the infant deaths classified according to the immediate cause, or the disease directly responsible for death, as certified by the attending physician.

TABLE 6.—*Deaths under 1 year, according to cause of death of infant and nativity and color of mother.*

Cause of death.	Deaths of babies of—			
	All mothers.	Native white mothers.	Foreign-born white mothers.	Negro mothers.
All causes	34	7	17	10
Diseases of digestive tract	11	1	6	4
Premature birth or congenital debility	9	3	6	.....
Diseases of respiratory tract	7	1	2	4
Malnutrition	3	1	1	1
All other causes	4	[1] 1	[2] 2	[3] 1

[1] Peritonitis. [2] Includes 1 case of asphyxia neonatorum and 1 case of diphtheria. [3] Acute nephritis.

Eleven babies of the group studied died from digestive diseases. Eight of these 11 deaths occurred in the fourth ward. It is significant that only 1 of the 11 was being exclusively breast fed at the time of death, 4 were partly breast fed, and 6 were bottle fed. The fatality from diarrheal diseases is always found to be higher during the summer months. Eight of the 11 infant deaths in Montclair from these diseases occurred in July and August.

In 1913 special efforts were made to lower the deaths from diarrhea. The baby clinic was by this time established on a sound basis, with a physician in consultation and the board of health nurse to follow up the doctor's instructions and to give the mothers directions in their own homes as to infant hygiene and the preparation of feedings. In 1913 there was not a single infant death from diarrhea.[1] Although the 1913 record is, of course, abnormal, such a decided decrease seems

[1] Annual Report of the Board of Health of the Town of Montclair, N. J., p. 51. 1913.

to indicate that definite efforts have been put forth to check the infant deaths from this disease.

Of the 34 deaths of Montclair babies 9 were from prematurity or congenital debility. As a large proportion of these deaths is usually ascribed to prenatal causes, it would seem that in Montclair further care of the mothers is needed during their period of pregnancy.

In Montclair some few prospective mothers are reached during their pregnancy by the women's clinic which since 1904 has been held twice a week at the Mountainside Hospital. Obstetrical cases coming to the hospital for advice have been referred to this clinic. The number of mothers who have the advantage of clinical advice, however, is small, and it would seem either that the existence of the clinic should be more widely advertised or that the prenatal work should be reorganized to include regular visits of a nurse to the prospective mother in her own home.

Syphilis has long been recognized as a factor among the causes of fetal deaths and deaths of early infancy. Venereal diseases were made reportable in Montclair in March, 1913. During the remainder of that year 14 cases of syphilis and 4 of gonorrhea were reported. A recent ordinance of the board of health (Dec. 8, 1914) provides that treatment of persons found to be affected with venereal disease shall be compulsory.

There were 7 deaths from respiratory diseases, of which 6 occurred in February and 1 in March. Three babies died of malnutrition and 1 from each of the following causes: Asphyxia neonatorum, diphtheria, peritonitis, and acute nephritis.

SEX.

It is generally found that infant mortality is higher among males than among females. The mortality rate of male infants in Montclair was found to be 88.2 and of female infants 80.8.

ILLEGITIMACY.

Only 7 of the 402 babies included in this investigation, or 1.7 per cent, were born out of wedlock. Four of the 7 were in the fourth ward, 2 in the first ward, and 1 in the second. One was of native white parentage, 2 of Polish, 1 of Italian, 1 of Swedish, and 2 of negro. Four of the 7 died—3 of enterocolitis and 1 of inanition.

ATTENDANT AT BIRTH.

It is perhaps of some interest to know to what extent mothers are attended at birth by midwives. Montclair has a considerable group of midwife cases, mostly among the Italian mothers. There are two possible explanations for this condition—one, the national custom among the Italians; the other, the lower fee demanded by the midwife, who in addition will render certain little household

services. Seventy-four of the 402 births included in this study were attended by midwives; of this number 65 were births to foreign-born white mothers. Only 5 native white mothers and 4 negro mothers were attended by midwives.

The midwives of New Jersey are licensed by the State board of medical examiners after an examination before the board and are required to register at the office of the county clerk. The law provides that they shall always secure the services of a reputable physician upon the appearance of any abnormal symptoms in either mother or child. Whenever a midwife files a birth certificate with the Montclair Board of Health the nurse calls on the following day at the address given to verify the information on the certificate. In this way she can determine incidentally whether the mother and child received proper attention at the hands of the midwife. A recent amendment of the sanitary code of Montclair provides that a midwife when called to a case shall report immediately to the board of health the name and address of the patient. This provision will enable the board of health nurse to be present at the delivery when it is considered advisable and will be a means of further supervision of midwives.

ECONOMIC STATUS OF THE FAMILY.

It is obvious that even the care given the baby by its mother often must be offset by the evils resulting from an income insufficient for the family's needs, since a low income frequently must involve undesirable housing accommodations, an overworked mother, insufficient nourishment for mother and child, and lack of competent medical advice. Sir Arthur Newsholme has found in his English studies that "infant mortality is higher among the poor than among the well to do, although natural feeding of infants is probably more general among the former." [1]. Table 7 shows that in Montclair the infant mortality rate was approximately two and one-half times as high among families where the income was less than $12 a week as among families where the income was $23 a week or more.

TABLE 7.—*Births, deaths under 1 year, and infant mortality rate, according to total family income.*

Total family income.	Births.	Deaths under 1 year.	Infant mortality rate.
Total	[2] 395	30	75.9
Under $625	95	11	115.8
$625 to $1,199	111	9	81.1
$1,200 and over	128	6	46.9
Not reported	61	4	65.6

[1] Report on Infant and Child Mortality, by the medical officer of the local government board, 1909–10. London, 1910.

[2] Exclusive of illegitimate births.

The following table shows that of the 95 babies living in families where the income was less than $625 only 5 were babies of native white mothers, 66 were babies of foreign-born white mothers, and 24 babies of negro mothers. Of the 128 babies in the group with an income of $1,200 and over, 100, or 78.1 per cent, were babies of native white mothers.

TABLE 8.—*Number of births, according to total family income and nativity and color of mother.*

Total family income.	All mothers.	Native white mothers.	Foreign-born white mothers.	Negro mothers.
Total	[1] 395	142	189	64
Under $625	95	5	66	24
$625 to $1,199	111	24	54	33
$1,200 and over	128	100	26	2
Not reported	61	13	43	5

[1] Exclusive of illegitimate births.

The father's occupation gives some indication of the economic and social position of the family and the standard of living which they must undertake to maintain.

TABLE 9.—*Births, deaths under 1 year, and infant mortality rate, according to occupation of father and nativity and color of mother.*

Occupation of father.	All mothers.			Native white mothers.			Foreign-born white mothers.			Negro mothers.		
	Births.	Deaths under 1 year.		Births.	Deaths under 1 year.		Births.	Deaths under 1 year.		Births.	Deaths under 1 year.	
		Number.	Infant mortality rate.		Number.	Infant mortality rate.		Number.	Infant mortality rate.		Number.	Infant mortality rate.
All occupations	[1] 395	30	75.9	142	7	49.3	189	15	79.4	64	8	125
Professional and business	120	5	41.7	88	4	45.5	31	1	[2]	1	.....	.....
Skilled trades	121	9	74.4	41	3	73.2	66	6	90.9	14	.....	.....
Semiskilled and unskilled trades, domestic service	148	15	101.4	12	.....	.....	89	8	89.9	47	7	148.9
Not reported	6	1	[2]	1	.....	.....	3	.....	.....	2	1	[2]

[1] Exclusive of illegitimate births.
[2] Total number of live births less than 40; base therefore considered too small for use in computing an infant mortality rate.

The group of babies whose fathers were professional or business men shows the extremely low infant mortality rate of 41.7. In the "skilled trades" group the rate has risen to 74.4, while among babies whose fathers are engaged in semiskilled trades, unskilled trades, and domestic service the rate is 101.4—more than double the rate for the first group. It will be seen that unskilled workers form a large group among the foreigners and Negroes, while few professional or business men are found in these population groups.

MOTHERS.

Occupation.—The mother's occupation bears a very close relation to the welfare of the baby. If the mother's employment during pregnancy involves the strain of long hours and hard work, the result is that she is less fit to bear the child or care for it after its birth. Her employment outside the home after the birth of the child means that the baby during her absence must depend for its care upon a relative, neighbor, or paid attendant; it means also the cessation of breast feeding. Table 10 shows that only 45 Montclair mothers were engaged in any occupation other than that of housekeeping for their own families. Of the 45 mothers who were gainfully employed, about three-fourths (34) were engaged in domestic or personal service, including the mothers who were living out in service, those who went out by the day, those who did laundry work either in their own homes or elsewhere, and those who kept lodgers. One mother was employed in a jam factory and 10 were helping either regularly or occasionally in their husbands' stores. A comparison of the infant deaths among babies of working and of nonworking mothers shows that a much larger proportion of babies of working mothers failed to survive their first year; there were 10 deaths among the 45 babies of working mothers as contrasted with 24 deaths among the 357 babies of nonworking mothers.

TABLE 10.—*Births and deaths under 1 year, according to occupation, nativity, and color of mother.*

Occupation of mother.	All mothers.		Native white mothers.		Foreign-born white mothers.		Negro mothers.	
	Births.	Deaths under 1 year.	Births.	Deaths under 1 year.	Births.	Deaths under 1 year.	Births.	Deaths under 1 year.
All occupations	402	34	143	7	193	17	66	10
Mothers not gainfully employed	357	24	141	7	178	15	38	2
Mothers gainfully employed	45	10	2	.....	15	2	28	8
Domestic or personal service	34	10	1	.....	6	2	27	8
Retail trade	10	.....	1	.....	8	.....	1	.....
Factory employment	1	.....	.....	.....	1	.....	.....	.....

Literacy.—Comparisons are shown in the following table between the infant mortality of babies of literate and of illiterate mothers, and of babies of mothers who can speak English and of those who must depend on a foreign language. Only babies of foreign-born white mothers have been included in these computations. The presence in the community of comparatively large groups of illiterate mothers and of mothers who can not speak English increases the problem presented to the agencies interested in infant-welfare work, for the illiterate mothers are generally less careful in following instructions than the more intelligent mothers, while the mothers who do not

speak English must explain their difficulties through an interpreter. The rate of infant mortality in Montclair is found to be relatively high among babies of illiterate mothers and of mothers who can not speak English.

TABLE 11.—*Births, deaths under 1 year, and infant mortality rate, according to the mother's literacy and ability to speak English, for all babies of foreign-born white mothers.*

Mother's literacy and ability to speak English.	Births.	Deaths under 1 year.	Infant mortality rate.
All mothers	193	17	88.1
Literacy:			
Literate	104	8	76.9
Illiterate[1]	83	9	108.4
Not reported	6	.....	.....
Ability to speak English:			
Can speak English	121	9	74.4
Can not speak English	70	8	114.3
Not reported	2	.....	.....

[1] Unable to read and write in any language.

FEEDING.

Authorities agree that the breast milk of the mother is the best possible food for the baby, particularly during the early months of its life. It is significant that of the 23 babies who died within the first year but after the first week only 5 were exclusively breast fed at the time of their death, 6 were partly breast fed, and 12 were artificially fed.

Table 12 shows the type of feeding prevailing among Montclair babies at different ages. "Breast fed" as used in this report means that the baby was nursed and had no artificial food whatever; "partly breast fed" means that the baby was nursed but was being given artificial food as well; "artificially fed" means that the baby had been completely weaned.

TABLE 12.—*Number and per cent of babies receiving specified type of feeding at 3, 6, and 9 months, respectively, according to nativity and color of mother.*

Age of baby and nativity and color of mother.	Alive at age indicated.	Breast fed.		Partly breast fed.		Artificially fed.	
		Number.	Per cent.	Number.	Per cent.	Number.	Per cent.
Babies of all mothers:							
Aged 3 months	378	290	76.7	14	3.7	74	19.6
Aged 6 months	374	196	52.4	36	9.6	142	38
Aged 9 months	370	92	24.9	91	24.6	187	50.5
Babies of native white mothers:							
Aged 3 months	137	85	62	5	3.6	47	34.3
Aged 6 months	137	55	40.1	12	8.8	70	51.1
Aged 9 months	136	22	16.2	25	18.4	89	65.4
Babies of foreign-born white mothers:							
Aged 3 months	179	159	88.8	5	2.8	15	8.4
Aged 6 months	178	112	62.9	20	11.2	46	25.8
Aged 9 months	177	54	30.5	56	31.6	67	37.9
Babies of negro mothers:							
Aged 3 months	62	46	74.2	4	6.5	12	19.4
Aged 6 months	59	29	49.2	4	6.8	26	44.1
Aged 9 months	57	16	28.1	10	17.5	31	54.4

Over three-fourths of the Montclair babies living at the end of their first quarter were breast fed at that age; over one-half were breast fed at the end of their first 6 months; and over one-half had been completely weaned at the end of their first 9 months.

Foreign-born white mothers nursed their babies longer than either the native white or negro mothers. Only one-twelfth of the foreign-born white mothers were feeding their babies artificially at the end of the first three months as contrasted with approximately one-fifth of the negro mothers and one-third of the native white mothers. At the end of nine months almost two-thirds of the native white mothers, slightly over one-half of the negro mothers, and little more than one-third of the foreign-born mothers were feeding their babies artificially.

From Table 13, showing the variations in the type of feeding according to the father's earnings, it is apparent that, generally speaking, as the income increased maternal nursing decreased. That a high infant mortality rate accompanied a low income has already been shown.[1] It would seem, then, that the disadvantages of a low income were sufficient to offset the greater prevalence of breast feeding among the babies of the poorer families.

TABLE 13.—*Distribution of babies of specified age by earnings of father and number and per cent of such babies completely weaned from breast.*

Babies living at specified age.	Annual earnings of father.				
	Total.	Under $625.	$625 to $899.	$900 and over.	Not reported.
3 months	372	118	55	169	30
Completely weaned from breast	73	15	7	45	6
Per cent	19.6	12.7	12.7	26.6	20
6 months	371	118	55	169	29
Completely weaned from breast	138	35	11	76	16
Per cent	37.2	29.7	20	45	55.2
9 months	367	117	53	168	29
Completely weaned from breast	183	42	22	98	21
Per cent	49.9	35.9	41.5	58.3	72.4

CIVIC FACTORS TENDING TO REDUCE INFANT MORTALITY.

EXPENDITURES FOR HEALTH AND SANITATION.

Of the 110 cities in the United States with a population approximating that of Montclair, i. e., 20,000 to 30,000, Montclair in 1913 ranked fourth in its per capita expenditure for health and sanitation; of the five New Jersey cities within the same population group, Montclair ranks first. The following figures are taken from the

[1] See Table 7, p. 19.

bulletin of the Bureau of the Census on "Municipal revenue, expenditures, and public properties, 1913":

Cities in 20,000 to 30,000 population group.	Expenditures[1] for health and sanitation.	
	Total.	Per capita.
United States:		
Newport, R. I.	$79,135	$2.76
Wilmington, N. C.	58,344	2.14
Stockton, Cal.	51,132	2.04
Montclair, N. J.	43,675	1.82
Waltham, Mass.	47,466	1.62
Madison, Wis.	46,884	1.62
Newburgh, N. Y.	45,157	1.57
Richmond, Ind.	34,380	1.46
Long Beach, Cal.	32,933	1.44
Winston-Salem, N. C.	31,209	1.43
New Jersey:		
Montclair	43,675	1.82
Plainfield	30,132	1.35
New Brunswick	19,663	.80
Kearney	12,050	.57
Union	10,749	.47

[1] Including expenditures for board of health, collection of ashes and garbage, sewer connections, maintenance and repair, and street cleaning.

ACTIVITIES OF BOARD OF HEALTH.

BIRTH REGISTRATION.

In Montclair the health officer is also the registrar of vital statistics. The law provides that births shall be registered within five days. Various methods are in use to make the registration of births as full and accurate as possible. All death records of children are checked back upon the birth returns.

When a birth certificate is filed by a midwife or by any other person than a physician the board of health nurse visits the mother on the following day to see that the certificate has been filled out correctly. This practice provides a check on the midwives who are apt to be careless in their returns.

In 1912 one physician was fined $200 for failure to register 10 births. Three canvasses from house to house for the purpose of securing unreported births have been made during the past eight years in sections of the city where mothers are attended by midwives. Since January 1, 1914, a very interesting plan for furthering registration has been in use. As soon as the attending physician or midwife files a certificate of birth a transcript is made by the board of health on an attractive form bearing the official seal of the board of health and is mailed to the mother, together with the following circular explaining the importance of birth registration, and asking her to correct any errors on the certificate:

IMPORTANT NOTICE.

The accompanying certificate of birth is an exact copy of the original certificate that is on file at this office. As this is a permanent record, a record by which a child

may be admitted to school; a record by which he (or she) may prove that he is of sufficient age to leave school and go to work; a record by which he may prove his right to vote, or to marry, or to come into possession of money that has been left to him; a record by which he may prove his place of birth or age as a prerequisite to holding certain public offices, it is imperative for the future good of the infant that all facts recorded at the time of his birth shall be accurate, and you are therefore requested to return this certificate for correction if any inaccuracy is noted. It is of particular importance that the names of the infant and of both parents shall be spelled correctly. If the name of the infant is changed, the certificate should be returned at once for correction.

A certificate similar to the inclosed form has been sent to the parents of every child born in Montclair since January 1, 1914, and you will confer a favor upon your friends by urging them to secure such a certificate if they have a child for which a certificate has not been received, for there may be some infants whose births have not been recorded at this office and who may thereby be put to great inconvenience in later years. Parents who desire may obtain, free of charge, certificates for children whose births occurred in Montclair prior to January 1, 1914, by making application at the office of the board of health, Municipal Building, Montclair, N. J.

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The mothers are beginning to learn that they should receive one of the official certificates and to ask for it in case it fails to come. Thus unreported births are brought to light.

SUPERVISION OF THE MILK SUPPLY.

For several years Montclair has had the advantage of an excellent milk supply, and Montclair mothers, whether rich or poor, have been able to secure pure milk for their babies. The board of health recognizes that one of its most important functions is the supervision of the town milk. Stringent regulations have been adopted and are rigidly enforced.[1] The system worked out consists of two checks upon impure milk—laboratory analysis and dairy inspection. Montclair is one of the few towns of its size with a bacteriological laboratory. The laboratory of the board of health is completely equipped with standard apparatus. The milk tests are made by a trained bacteriologist, who examines the milk for bacteria count, butter fats, solids, and sediment.

Laboratory analysis.—During 1912, 307 samples of milk were analyzed, averaging over 2 samples a month for each supply, since there were in that year 11 supplies for the town. The bacteria limit fixed by ordinance is 100,000 bacteria per cubic centimeter. In 1912 one supply averaged above this limit. The average count of all supplies weighted according to the quantity delivered by each dealer was 50,000 for raw milk and 8,500 for the pasteurized supply. Only one sample collected during the year contained less than the 11.5 per cent of solids required by law for normal milk.

Dairy inspection.—All the dairies supplying Montclair with milk are inspected at intervals during the year. These dairies numbered

[1] For milk regulations, see p. 31.

99 at the end of 1912. They are scored according to the United States Bureau of Animal Industry score card, the possible score of 100 being subdivided as follows:

Equipment.		Method.	
Total	40	Total	60
Cows	8	Cleanliness of cows	8
Stable	18	Cleanliness of stable and yard	16
Utensils	10	Cleanliness of milk room	3
Milk room	4	Cleanliness of utensils	8
		Cleanliness of milking	9
		Handling and cooling of milk	16

The following summary [1] of dairy scores for 1911, 1912, and 1913 shows an improvement each year. All dairies from which cream and pasteurized milk are obtained are included, as well as those supplying raw milk:

Score.	Number of dairies, 1913.	Per cent distribution of dairies.		
		1913	1912	1911
Total	113	100.0	100.0	100.0
90 to 100	9	8.0	7.1	6.5
80 to 90	9	8.0	10.1	10.7
70 to 80	83	73.4	72.7	33.4
60 to 70	11	9.7	10.1	41.9
Below 60	1	.9	.....	7.5

The scores of each individual dairyman, showing equipment, methods, and total score, are published in the board of health report, so that the housewife of Montclair may intelligently choose her milk dealer. The reports also publish detailed descriptions of the individual milk supplies of Montclair with reference to average bacteria count, richness of milk, dairies from which the supply is derived, etc.

SUPERVISION OF THE WATER SUPPLY.

The board of health makes a bacterial analysis of the town water every other day and a complete analysis once a month. The typhoid-fever record of a town is generally taken as some indication of the purity of the water supply. In 1912 there were 15 cases of typhoid fever, but no fatalities.[1]

The source of the water supply is the Passaic River above Little Falls. The Montclair Water Co. operates a filtration plant at Little Falls, supplying filtered water to the following municipalities: Paterson, Passaic, part of the township of Acquackanonk, Prospect Park, Little Falls, Montclair, Bloomfield, Glen Ridge, West Orange, Nutley, Kearney, Harrison, East Newark, and Bayonne. The system consists of a mechanical filtration plant with a large settling and coagulating basin and a sterilization plant.

[1] Annual Report of the Board of Health of the Town of Montclair, N. J., 1913.

ACTIVITIES OF THE ENGINEERING DEPARTMENT.

Newsholme recognizes municipal sanitation as one of the chief means for a low infant mortality.

Sewage disposal.—According to the report of the committee on disposal of sewage of Orange, Montclair, and East Orange, 1912, "it may be said that each of the municipalities is quite well sewered in so far as the removal of sewage alone is concerned." In 1912 Montclair had about 63 miles of sanitary sewers, which compared very favorably with its 67 miles of town streets.

The sewage leaves Montclair from the southwest corner of the town and passes through Glen Ridge and into Bloomfield; here the Orange branch sewer and the Montclair branch sewer join, forming the Union outlet sewer. This sewer follows the Second River to a point in North Newark on the west bank of the Passaic River, where the sewage is discharged into the river.

A new system of sewage disposal has been proposed for Orange, Montclair, and East Orange combined. The new plan provides for carrying the sewage of the three towns in new sewers by gravity to a point in Belleville, to be reached at such an elevation that the sewage can pass from there by gravity through sewage-disposal works and discharge, clarified and purified, into the Third River, a tributary of the Passaic. The recommended sewage-disposal works consist of a coarse screen, grit chambers, main settling tanks of the Imhoff type, sludge drying beds, sprinkling filters, chemical house with disinfection equipment, and final settling tanks. The total estimated cost is $1,080,000, to be shared by the three municipalities.[1]

Disposal of ashes and garbage.—The method of disposal of ashes and garbage is as follows: One collection of ashes a week is made in the summer season and two a week during the winter months, three teams being employed in the summer and six in the winter. The material collected is used for filling low areas wherever practicable and in building roadways on dirt streets. The remainder is hauled to the dump on Wildwood Avenue.

Two collections of garbage a week are made from all the households and during the summer months three a week in the business section. The material collected is taken to the north end of the town, where it is dumped into zinc-lined receptacles, which are protected from the weather and provided with means for flushing. The water used in flushing is carried away to a cesspool. The wagon, after dumping, is also flushed. From the tanks the garbage is taken away by farmers of the adjoining country. This method of disposing of the town's ashes and garbage falls short of the present-day standards for this branch of municipal sanitation. The town engineer,

[1] Report on the Disposal of Sewage of Orange, Montclair, and East Orange, N. J., by Rudolph Hering and John E. Gregory, March, 1912.

in his annual report for 1913, advocates a properly designed incinerator and presents the following argument in its favor:

The time is not far away when the lowlands will have become filled and dumps can not be found except with long hauls and with resulting high hauling cost. The garbage dump as at present operated requires constant attention to avoid it becoming a nuisance and at best is insanitary. A properly designed incinerator plant would be a great improvement over the present method and would provide as well a place for the disposal of other wastes for which no provision is at present made. An incinerator plant would also make possible the collection of ashes and garbage by the same wagons and greatly reduce the cost of collections.

Paving.—In the town of Montclair in 1913[1] there were 83.3 miles of streets, of which 8 miles were private streets, 8.2 miles country roads, and 67 miles town streets. Of the 67 miles of town streets 58.9 miles were macadamized, less than a mile (the main business street of the town) was permanently improved or paved, and 7.6 miles were unimproved dirt roads.

THE BABY CLINIC.

The consensus of opinion in Montclair seems to be that the consultations at the baby clinic and the visits of the nurse, who shows the mother in her home how to prepare feedings, have been of the utmost importance in saving the lives of Montclair babies.

The baby clinic, reorganized under its present system in March, 1912, is an instance of a cooperation of social, civic, and private agencies in an effort to save the babies of the community. A weekly clinic for consultation as to feedings and infant hygiene and for medical advice is held at the Montclair Day Nursery under the joint charge of a Montclair physician, who has given her services, and the board of health nurse. Two dairies furnish the clinic babies with certified milk at 10 cents a quart, and the board of health furnishes milk, sugar, barley water, and limewater for modifying the milk to mothers who are unable to pay. The major part of the work consists of the visits of the nurse to teach the mother in her own home how to prepare feedings in accordance with the formula worked out for her baby at the clinic. A card containing the following announcement of the clinic is mailed to the mother of every baby for whom a birth certificate is filed:

SPECIAL ANNOUNCEMENT.

The attention of parents is called to the fact that a clinic for babies is held at the day nursery, Glen Ridge Avenue and Grove Street, Montclair, N. J., at 3 o'clock every Thursday afternoon. If your baby is sick, or if its food does not agree with it, you may obtain medical advice free by taking the infant to the clinic at the hour mentioned. If your baby needs attention on some other day of the week, and you have no physician, telephone to the board of health office (Montclair 2700) and ask to have the nurse call at your home. There is no charge for her service.

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[1] First Annual Report of Town Engineer, Montclair, N. J.

The clinic urges breast feeding wherever possible, with supplementary feedings of modified milk where the mother's milk is found to be insufficient.

In the discussion of infant deaths from diarrhea the fact has been noted that while in 1912 diarrhea was the leading cause (disease) of infant mortality, not a single baby died from this disease in 1913. Practically all the clinic babies come from the fourth ward, in which, as has been seen, the infant mortality rate has greatly decreased. The influence of the clinic is felt by a large proportion of the fourth-ward babies, since 83 of the 187 babies born in this ward in 1913 were brought to the clinic, and many more were visited in their homes.[1]

[1] Report of Dr. Mercelis to the Montclair (N. J.) Board of Health, on the "Babies milk clinic," March, 1914.

APPENDIX.

MILK REGULATIONS.

[Extracts from an ordinance establishing a sanitary code for the town of Montclair. Passed Apr. 9, 1907, and as amended to Jan. 1, 1915.]

ARTICLE 8.

MILK AND ITS PRODUCTION.

SECTION 1. Any person desiring to engage, either as principal or agent, in the production, sale, or distribution of milk or cream within the town of Montclair may make application therefor to the board of health, upon blanks to be furnished by the board, setting forth the locality from which such person or persons procure the milk or cream; also a full and complete list of the names and addresses of those from whom he purchases milk or cream, and also the place at or from which he desires to sell milk or cream, and whether he desires to sell raw or pasteurized milk or cream, or both. Said application shall also state whether the applicant desires to sell as principal or agent, and if as agent, give the name of his principal. It shall be signed by the applicant, and if granted by the said board a license shall be issued to him signed by the president and secretary of the board in the following form:

["Board of health, Montclair, N. J. Milk license No. ——.]

"——— ———, of ———, is hereby licensed to engage in the business of selling and distributing in the town of Montclair (raw or pasteurized) milk and cream from (store or wagons) for a period of one year from the date hereof: *Provided*, That if such person or any of his employees, servants, or agents shall violate any ordinance of the said board in conducting said business, or any of the provisions of an act entitled 'An act to regulate the production, distribution, and sale of milk or cream,' approved March 30, 1914, or other statutory regulations of such sales, this license may, in the discretion of the board, be revoked by the board.

"Dated at Montclair, N. J., this —— day of ———, 191—."

The annual license fee shall be $1 for each place at or from which milk is sold and for each wagon or vehicle used in the distribution thereof.

All persons engaged in the business of selling milk or cream in the town of Montclair at the date when this ordinance takes effect, who desire to continue the same, must file their applications for a license not later than the Monday before the second Tuesday of January of each year. Licenses when granted shall be for a period of one year from the time of granting the same: *Provided*, That any licenses so granted may be vacated by the board in case the licensee or any of his employees, servants, or agents shall violate any of the provisions of the ordinance regulating the production, sale, and distribution of milk and cream or any of the provisions of the act of the Legislature of the State of New Jersey entitled "An act to regulate the production, distribution, and sale of milk and cream," approved March 30, 1914, or other statutory regulations of such sales.

Persons desiring hereafter to commence the business of selling milk or cream in Montclair may make their application at any meeting of the board, but in every such case new applications must be made on the Monday before the second Tuesday of January of each year, as above provided.

LICENSE REQUIRED

No person shall sell or offer for sale in the town of Montclair any milk or cream unless such person has obtained a license from the board of health authorizing him to make such sale. All persons having a license as required by this section shall at all times display such license in a conspicuous manner in the place where the milk and cream is kept for sale or distribution: *Provided*, That when such sale or distribution is

made from a wagon or other vehicle such vehicles shall have displayed on both sides thereof either a metal license tag that will be furnished by the board of health upon application by the proper parties or a painted sign similar in lettering to the license tags furnished by the board and with the proper license number.

No person who is licensed by the board to sell milk or cream in the town of Montclair shall add any dairy to his source of supply without the written permission of the board.[1]

Any person who is licensed to sell milk or cream in the town of Montclair shall immediately withdraw from the town any supply upon notification from the board that the producer of such supply has failed or refused to comply with any of the requirements that are or hereafter may be required of milk producers.

No milk shall hereafter be produced, sold, exposed for sale, or delivered within the town of Montclair unless it is produced and handled in accordance with the requirements of this article.

SEC. 2. No person shall hereafter engage in the sale or exposure for sale of milk within the town of Montclair without first having filed with the board of health a true and complete statement of the locality from which all the milk they handle is produced, a complete list of the persons from whom the said milk is purchased, and a complete list of the localities from which ice for cooling purposes is obtained; and if at any time the place at which said milk is produced or the persons from whom the said milk is purchased or the locality from which said ice is obtained be changed the said board shall be notified immediately. On or before the 15th day of June and of December of each year, and at any other time within three days of the receipt of a request therefor, any person engaged in the sale of milk in Montclair shall furnish said board with a complete list of all persons to whom milk is regularly sold.

SEC. 3. All premises whereon milk is produced or handled for sale or distribution in the town of Montclair shall be open to this board for inspection at any time, and owners of cows from which said milk is produced shall permit a veterinarian in the employ of this board to examine said cows at any time.

Such examination shall consist of any efficient and reasonable method that may be used by the said veterinarian to determine whether or not the cows are diseased.

STABLES.

SEC. 4. Cows shall be stabled under light, dry, and well-ventilated conditions, and the stables shall conform in all respects to the requirements hereinafter set forth, viz:

(a) Any portion of a barn used as a cow stable shall be tightly ceiled overhead, shall be entirely partitioned off from the rest of the barn, and shall not be used for the storage of farm utensils nor for any other purpose.

(b) The walls and ceilings of said stables, not otherwise treated in a manner approved by this board, shall be whitewashed at least every six months.

(c) Stables shall have at least 2 square feet of unobstructed window glass per 500 cubic feet of air space, the windows to be arranged so as to light all portions of the stable effectively.

(d) Each cow shall have at least 3 feet in width of floor space when fastened in stanchions, and in all cases where no adequate artificial means of ventilation is provided each animal shall have air space of at least 600 cubic feet. All cow stables shall be well ventilated at all times.

(e) All stables shall be provided with a tight, dry floor, and the manure drops or urine gutters shall be water-tight and shall be thoroughly cleaned at least twice each day.

(f) No manure, garbage, nor other putrescible matter shall be allowed within 100 feet of any cow stable, milk house, or cooling room; and the drainage from said buildings shall be such that no liquid wastes can collect within this distance.

(g) No raw milk or cream shall be sold in the town of Montclair unless it is produced and handled at a farm or dairy that scores at least 80 on the official score card of the United States Bureau of Animal Industry, and no pasteurized milk or cream shall be sold unless it is produced and handled at a farm or dairy that scores at least 70 on said score card.

COWS.

SEC. 5 (a). No milk shall be sold or offered for sale or distributed in the town of Montclair except from cows in good health nor unless the cows from which it is obtained have, within one year, been examined by a veterinarian whose competency is vouched for by the State veterinary association of the State in which the herd is located and a certificate signed by such veterinarian has been filed with the board of health stating the number of cows in each herd that are free from disease. This

[1] Art. 8, sec. 5 (a).

examination *shall include the tuberculin test*,[1] and charts showing the reaction of each individual cow shall be filed with this board. All cows which react shall be removed from the premises at once if the sale of milk is to continue, and no cows shall be added to a herd until certificates of satisfactory tuberculin tests of said cows have been filed with this board.

Every cow that is tested as required by the provisions of this section and found to be free from disease shall, immediately after such test is completed, be tagged in the following manner by the veterinarian who made the test: *Provided*, That if a cow is already tagged in compliance with this section no retagging will be required if the tag contains a proper serial number. The tag shall be attached to one ear of the cow so that it will be plainly visible and so that it can not be removed unless the ear be torn. The tags shall be serially numbered in a manner approved by the board and shall be of such construction that when once removed they can not be reused. [The board furnishes ear tags without cost to the dairyman.]

Each certificate that is filed as required by the provisions of this section shall state clearly how each cow is tagged, so that any such cow may be identified.

Any person who at any time, whether temporarily or otherwise, has in his herd or on his premises a cow or cows that have not been tagged as outlined above shall be considered as having willfully violated this ordinance and shall be liable to a penalty of $25 for each cow not so tagged.

The owner of every cow that reacts to the tuberculin test shall notify this board in writing within 72 hours after the test is completed of the disposition that has been made of such reacting cow. The said notification shall also contain the name and address of the person to whom the reacting cow was sold or the name and address of the person by whom said cow was slaughtered.

Every herd in which more than one reactor is found to every 15 cows shall be retested at the end of six months in the manner hereinbefore provided for making tuberculin tests, and the records of such tests shall be filed with the board of health as required in the case of annual tests.

Every person who is licensed by the board to sell milk or cream in the town of Montclair shall file, or cause to be filed, with the board of health, within 72 hours after the completion of a tuberculin test of any cow in a herd from which his supply is obtained, a chart showing full details of such tuberculin test, and such chart, to be accepted by the board, must show that temperature readings were made at least every two hours from the tenth to the twentieth hour after the cow was injected with tuberculin; and whenever at the twentieth hour a rising temperature is being recorded, additional temperatures must be taken and recorded until a definite reaction is established or the temperature of the cow drops to normal. The chart must also state the name of the manufacturer of the tuberculin used, the amount used, and the hour of injection. If the cow has been previously tested within a period of four months, or if the herd on the previous test showed a large percentage of tuberculous animals or of animals with a suspicious temperature, the amount of tuberculin used and the hours of reading temperatures shall conform to the best practice in such cases.

Every cow that has been admitted to the State of New Jersey within three months and added to a herd from which milk is produced for sale in Montclair must be retested not less than 60 days and not more than 90 days after such admission to the State, and no cow shall be added to a herd unless such cow has been tested to the satisfaction of the board within 3 months.

In addition to the tuberculin tests already required by this section the board may, when in its opinion the number of tuberculous cows found in a herd or the extent of the lesions found in said cows warrants such action, require by resolution that a herd shall be retested, and no raw milk or cream from such a herd shall be sold in the town of Montclair until such a retest is made to the satisfaction of the board: *Provided*, That a five-day notice to make such a retest must be served by the board upon the person who is licensed to sell such milk or cream.

The board may also require that any cow that shows an irregular temperature at the time of a tuberculin test, or that, in the opinion of the board, has not been properly tested, shall be removed from the herd, and no person shall sell in the town of Montclair any raw milk or cream from any such cow until a retest has been made to the satisfaction of the board.

All tuberculin tests required by this section may be made by any regularly qualified veterinarian, unless the board can show cause why tests made by such veterinarian should not be accepted.

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[1] The tuberculin test will not be required whenever the board by resolution permits or requires the pasteurization of a supply.